

second element as a function of temperature are identical even when said coupon is exposed to high, variable heat fluxes in said hostile environment.

2. (Unchanged) A coupon as in claim 1 in which said thin metal elements are composed of a material which has substantially the same resistance before being subjected to a corrosive environment.
3. (Unchanged) A coupon as in claims 1 or 2 in which the substrate is an insulator.
4. (Unchanged) A coupon as in claim 1 in which the substrate is a ceramic.
5. (Unchanged) A coupon as in claim 4 in which the ceramic is beryllium oxide.
9. (Unchanged) A coupon as in claim 2 in which said material forming the thin films is a metal or metal alloy.
10. (Unchanged) A coupon as in claims 1 or 2 in which said first and second resistive elements are on opposite sides of the substrate and the substrate is thermally thin.

Please amend claims 11 as follows:

11. (Twice amended) A system for measuring the corrosion rate of metals in a hostile environment comprising a coupon including:
 - a substrate, said substrate being formed of a material that is chemically inert in a fireside environment and having a high thermal conductivity;
 - a corrodible long and narrow thin film metal resistive element carried on said substrate for exposure to the hostile environment;
 - a second reference long and narrow thin film metal resistive element carried on said substrate shielded from the hostile environment, said first and second thin film elements positioned on said substrate close enough to each other throughout their paths to experience substantially the same thermal environment, such that changes in the resistance of said first and

second element as a function of temperature are identical even when said coupon is exposed to high, variable heat fluxes in said hostile environment;

means for driving a current I through said first and second thin film metal elements;

means for measuring the voltage VC generated across said corrodible thin film metal elements and the voltage VR generated across said reference thin film element by the current flowing therethrough; and

means for processing said current and voltages to provide a measure of change in resistance of the corrodible thin film metal element.

12. (Unchanged) A system as in claim 11 including means for continuously receiving resistance difference to indicate the progression of corrosion.

Please amend claims 13 and 14 as follows:

13. (Amended) A system as in claim 11 in which said thin film metal elements are deposited so as to have essentially the same resistance before corrosion of the corrodible element.

14. (Twice amended) A coupon for use in measuring the corrosion rate of metals exposed to a high-temperature hostile environment comprising:

a substrate, said substrate being formed of a material that is chemically inert in a fireside environment and having a high thermal conductivity;

a first thin long and narrow elongated strip of metal or metal alloy adapted to be exposed to the hostile environment carried by said substrate; and

a second thin long and narrow elongated strip of the same metal or metal alloy as the first carried by the substrate and shielded from the hostile environment but positioned close enough to said first element to experience substantially the same thermal environment as said first element, such that changes in the resistance of said first and second element as a function of temperature are identical even when said coupon is exposed to high, variable heat fluxes in said hostile environment.

15. (Unchanged) A coupon as in claim 14 in which the substrate is thin and the first and second elongated strips are on opposite faces of the substrate whereby the second elongated strip is shielded from the hostile environment by the substrate.

16. (Unchanged) A coupon as in claim 15 wherein the second elongated strip is further shielded by an oxide film on its exposed surface.

20. (Unchanged) A coupon as in any of claims 14, 15, or 16 in which the substrate is a ceramic.

21. (Unchanged) A coupon as in any of claims 14, 15, or 16, in which said substrate is a metal with an oxide insulating and protective film.

Please add new claim ²⁵~~22~~ as follows:

²⁵~~22~~ (new) A coupon as in claim 1, in which said thin film resistive elements provide a continuous high resistance path in which there is a substantial change in resistance as the electrode corrodes.